WHAT IS CLAIMED IS:

1. A method for controlling a critical dimension, comprising:

defining a difference between a designed dimension and an etched dimension as a dimensional displacement;

specifying a target value of the dimensional displacement;

preparing a plurality of samples classified into groups according to exposure ratio;

etching the samples of each group until an etch end point is detected and over-etching the samples of each group for different times according to a uniform time interval;

selecting an end point detection time and an over-etch time of each group according to the target value of the dimensional displacement;

determining a correlation function of end point time to over-etch time; and

determining an over-etch time corresponding to the end point time using the correlation function.

2. The method of claim 1, wherein preparing the plurality of samples comprises:

specifying an exposure ratio as a variable;

specifying a uniform variable of each group; and

preparing a plurality of samples in each group.

3. The method of claim 1, wherein etching the samples of each group comprises:

determining a designed dimension of each group;

etching samples in each group, wherein etching time applied to each sample is different;

determining dimensions after etching the samples;

determining dimensional displacement in each group; and

selecting an etching time dimensional displacement of each group is substantially identical to the target value,

wherein the end point is detected by an end point detector and the over-etch time is determined by subtracting the picked out EPD time from the selected etching time.

4. The method of claim 1, wherein the etch end point is detected using optical emission spectrometer.

5. The method of claim 1, wherein determining the correlation function comprises:

determining a relation graph of the EPD time and the over-etch time when the dimensional displacement is substantially identical to the target value; and

determining the correlation function from the relation graph.

6. The method of claim 1, wherein the correlation function is implemented by an etching apparatus as an over-etching control function,

wherein the over-etching control function determines the over-etch time corresponding to the detected EPD time using the correlation function and commands to carry out over-etch process during the determined over-etch time.

7. The method of claim 1, wherein the determining over-etch time corresponding to the end point, further comprises:

forming a photoresist pattern on a substrate with material layer;

using the photoresist pattern as an etch mask, etching the material layer and detecting end point time using end point detector; and

feeding the end point time to the correlation function to calculate over-etch time, and performing over-etching during the determined over-etch time.

8. The method of claim 7, wherein the step of etching is performed in etching apparatus fed with the correlation function, and

wherein the etching apparatus calculates over-etch time by feeding EPD time to the correlation function when end point is detected, and outputs etch commands during the over-etch time.

9. The method of claim 7, wherein the end point is detected by an optical emission spectrometer.

10. An etching apparatus for controlling a critical dimension, comprising:

a processor for executing code defining a correlation function of end point time to over-etch time, the correlation function determining an over-etch time corresponding to the end point time,

wherein the correlation function is defined according to a difference between a designed dimension and an etched dimension as a dimensional displacement.

11. The etching apparatus for claim 10, wherein a target value of the dimensional displacement is specified.

12. The etching apparatus of claim 10, wherein a plurality of samples are classified into groups according to exposure ratio and the samples of each group are etched until an etch end point is detected and over-etching the samples of each group for different times according to a uniform time interval.

13. The etching apparatus of claim 10, wherein an end point detection time and an over-etch time of each group is selected according to the target value of the dimensional displacement.

14. The etching apparatus of claim 10, further comprising an optical emission spectrometer for detecting the end point.